

LISTING OF CLAIMS

1. (currently amended) A method of monitoring the condition of a pump, or a component of a system comprising having a pump which wherein the component is not a component of the pump, the method comprising the steps of:
generating a predetermined test condition in the pump or system component; and
obtaining signals indicative of a condition of the pump or system during a period in which the test condition is present.
2. (currently amended) A-The method as claimed in claim 1, wherein said-the step of generating a predetermined test condition comprises generating an abnormal load condition whereby said-the pump or system component is subject to an increased stress as compared with normal operating stresses.
3. (currently amended) A-The method as claimed in claim 2, wherein said-the step of generating a predetermined test condition comprises causing a reduction in clearance between parts of the pump and said-obtaining the signals are obtained during a period in which said-the reduction in clearance is present.
4. (currently amended) A-The method as claimed in claim 3, wherein said-the pump has a rotor and a stator and the clearance that is reduced is a clearance between the rotor and the stator.
5. (currently amended) A-The method as claimed in claim 4, wherein said-the clearance is reduced at least in part by selective control of rotational speed of said-the rotor.
6. (currently amended) A-The method as claimed in claim 5, wherein said-the reduction in clearance is at least in part caused by the steps of causing a predetermined reduction in rotor rotation speed from a selected speed for a predetermined period of time and then

causing a predetermined increase in rotor rotation speed above said-the selected speed for a predetermined period of time.

7. (currently amended) A-The method as claimed in any one of claims 3 to 6, wherein said the pump is provided with a cooling system and said-the reduction in clearance is at least in part caused by controlling a rate of flow of coolant to cause a perturbation of temperature in said-the pump.
8. (currently amended) A-The method as claimed in any one of claims 3 to 7, wherein said the reduction in clearance is at least in part caused by increasing a gas flow rate through said-the pump.
9. (currently amended) A-The method as claimed in any one of the preceding claims 1, wherein said-the pump is driven by an electric motor and said-the signals provide an indication of the current supplied to said-the motor.
10. (currently amended) A-The method as claimed in any one of the preceding claims 1, wherein the system component comprises a conduit connected with the pump, and said the system condition is a condition of said-the conduit.
11. (currently amended) A-The method as claimed in claim 10, wherein said-the step of generating a predetermined test condition comprises generating a predetermined test flow rate in saidthe conduit that is greater than a normal operating flow rate through saidthe conduit.
12. (currently amended) A-The method as claimed in claim 11, further comprising obtaining saidthe signals indicative of a condition of the system by means of a pressure sensor arranged to sense pressure in saidthe conduit.

13. (currently amended) A-The method as claimed in claim 11-~~or 12~~, wherein ~~said~~the test flow rate in ~~said~~the conduit is generated by injecting a ~~pressurised~~pressurized flow into ~~said~~the conduit.
14. (currently amended) A-The method as claimed in claim 11, ~~12 or 13~~, wherein ~~said~~the test flow rate is generated by injecting a ~~pressurised~~pressurized gas flow into ~~said~~the pump.
15. (currently amended) A-The method as claimed in ~~any one of the preceding claims 1~~, wherein the pump or apparatus with which the pump is associated is equipped to store ~~said~~the signals
16. (currently amended) A-The method as claimed in ~~any one of the preceding claims 1~~, wherein ~~said~~the signals are transmitted to a storage location via a LAN or the internet.
17. (currently amended) A-The method as claimed in ~~any one of the preceding claims 1~~, wherein ~~said~~the signals are ~~analysed~~analyzed to assess the condition of the pump or system component.
18. (currently amended) A-The method as claimed in claim 17, wherein ~~said~~the ~~analysing~~analyzing step comprises comparing ~~said~~the signals with signals obtained during at least one previous predetermined test condition of the pump or system component.
19. (currently amended) A-The method as claimed in claim 17-~~or 18~~, wherein ~~said~~the ~~analysing~~analyzing step comprises comparing ~~said~~the signals with pre-programmed data.
20. (currently amended) A-The method as claimed in claim 17, ~~18 or 19~~ wherein ~~said~~the ~~analysing~~analyzing step comprises comparing ~~said~~the signals with signals obtained from at least one other pump or like system component of another system during at least one predetermined test condition of the ~~or each~~ other pump or system component.

21. (currently amended) A-The method as claimed in ~~any one of claims 17 to 20~~, wherein ~~said the analysing-analyzing step comprises inputting said the signals into an algorithm to provide a prediction of pump or system component condition.~~
22. (currently amended) A-The method as claimed in ~~any one of claims 17 to 21~~, wherein ~~said the analysing-analyzing step comprises inputting said the signals into an algorithm to provide a prediction of pump or system component life until a predetermined condition of the pump or system component will occur.~~
23. (currently amended) A-The method as claimed in ~~any one of claims 17 to 22~~, wherein signals indicative of a system component condition are obtained and ~~said the analysing-analyzing step includes using said the signals to predict a condition of the pump or system.~~
24. (currently amended) A-The method as claimed in ~~any one of claims 17 to 23~~, further comprising providing an audible indication of the result of ~~said the analysing-analyzing step~~.
25. (currently amended) A-The method as claimed in ~~any one of claims 17 to 24~~, further comprising providing a visual indication of the result of ~~said the analysing-analyzing step~~.
26. (currently amended) A-The method as claimed in ~~any one of claims 17 to 25~~, wherein ~~said the pump or system is automatically closed down if said the analysing-analyzing step indicates a predetermined condition of the pump or system component.~~
27. (currently amended) A-The method as claimed in ~~any one of the preceding claims 1~~, wherein the pump or apparatus with which the pump is associated is able to determine whether the pump or system is in a condition that permits testing of the pump or system component, ~~and to cause the implementation of the steps of any one of the preceding claims if said condition permits testing of the pump or system component condition.~~

28. (currently amended) A-The method as claimed in claim 27, wherein saidthe determining step is performed at predetermined intervals.
29. (cancelled)
30. (cancelled)
31. (currently amended) Apparatus comprising a pump, pump controller and ~~at least one a~~ sensing device for sensing a pump operating parameter, saidthe pump controller being able to control saidthe pump so as to selectively generate a predetermined pump test condition and the ~~or each said~~ sensing device providing signals indicating values of saidthe parameter when saidthe test condition is generated.
32. (currently amended) Apparatus as claimed in claim 31, wherein saidthe ~~at least one~~ sensing device comprises a current sensing device for sensing current supplied to a motor that drives saidthe pump.
33. (currently amended) Apparatus as claimed in claim 31-~~or~~32, wherein saidthe ~~at least one~~ sensing device comprises a pressure sensing device for sensing a pressure in saidthe apparatus.
34. (currently amended) Apparatus as claimed in claim 31,~~32 or~~33, wherein saidthe apparatus comprises a cooling system for saidthe pump, saidthe controller being operable to control saidthe cooling system to generate a saidthe predetermined test condition.
35. (currently amended) Apparatus as claimed in ~~any one of~~ claims 31 to 34, wherein saidthe controller is able to control pump speed to generate a saidthe predetermined test condition.

36. (currently amended) Apparatus as claimed in ~~any one of~~ claims 31 to 35, wherein ~~said~~the apparatus comprises a source of ~~pressurised~~ pressurized gas and ~~said~~the controller is able to cause a flow of gas from ~~said~~the source to generate a ~~said~~the predetermined test condition.
37. (currently amended) Apparatus comprising a pump, a controller, an exhaust conduit extending from ~~said~~the pump, ~~at least one~~a sensing device for sensing a condition in ~~said~~the conduit, a connection associated with ~~said~~the pump and/or conduit for connecting ~~said~~the pump and/or conduit with a source of ~~pressurised~~ pressurized gas and valving for controlling flow of ~~said~~the gas into ~~said~~the pump and/or conduit, ~~said~~the controller being able to control ~~said~~the valving to selectively admit ~~said~~the gas into ~~said~~the pump and/or conduit so as to generate a predetermined test condition in ~~said~~the conduit and the ~~or each~~ ~~said~~-sensor providing signals indicative of ~~said~~the condition in the conduit when ~~said~~the test condition is generated.
38. (currently amended) Apparatus as claimed in claim 37, wherein ~~said~~the ~~at least one~~a sensing device comprises a pressure sensor for sensing gas pressure in ~~said~~the conduit.
39. (currently amended) Apparatus as claimed in claim 37 or 38, wherein ~~said~~the controller is a controller for ~~said~~the pump.
40. (currently amended) Apparatus as claimed in ~~any one of~~ claims 31 to 36 or claim 39, wherein ~~said~~the controller comprises a computer connectable with ~~said~~the pump.
41. (currently amended) Apparatus as claimed in claim 40, wherein ~~said~~the controller is connectable with the pump via a LAN or the internet.
42. (cancelled)